## NON-TECHNICAL ABSTRACT

Autologous bone marrow transplantation is often used to allow higher doses of chemotherapy to be given to patients with pediatric cancer. The underlying rationale for this approach is that the availability of stem cells for reinfusion allows the administration of higher doses of chemotherapy in situations where the low blood counts caused by chemotherapy would otherwise limit the dose. This capability may allow a higher proportion of patients to be cured than would be possible with conventional therapy. The traditional source of stem cells for transplantation has been the bone marrow. Over the past five years however, alternative sources such as peripheral blood and umbilical cord blood have been used increasingly to supplement or replace marrow. Peripheral blood stem cells, in particular, appear especially promising, as recovery of blood counts may be faster than with marrow. However, it is still unclear whether peripheral blood will provide the same long term recovery after autologous transplant and whether immune recovery is equivalent to that observed after marrow transplant. This is an important issue in deciding what the best source of stem cells for future gene therapy studies is as long term survival of cells will be required.

To compare the short and long term recovery of blood and marrow, we will mark stem cells from these two sources with the neomycin resistance gene in two distinguishable vectors. This will allow us to learn how quickly each portion engrafts and how long each portion survives in the patient.